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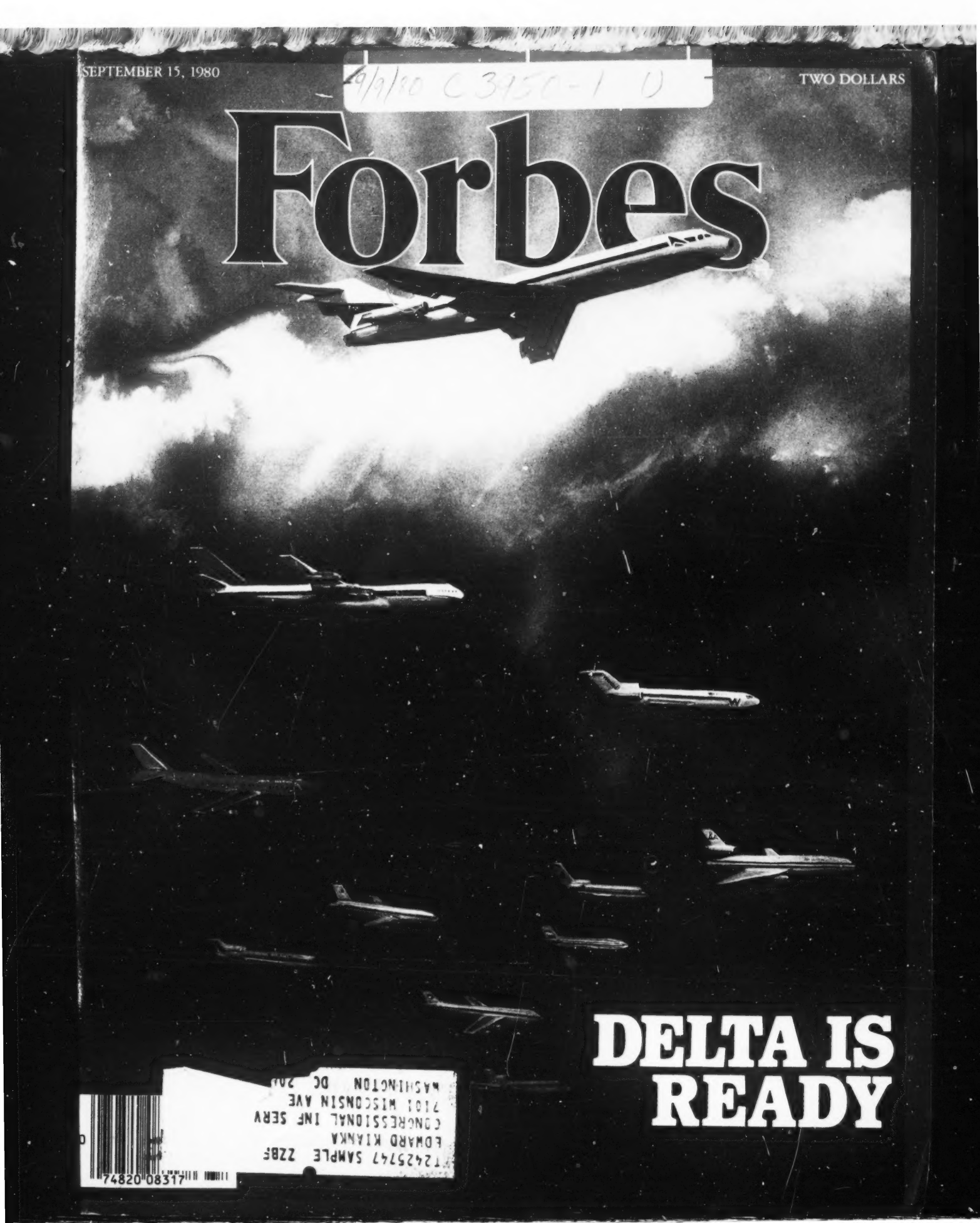

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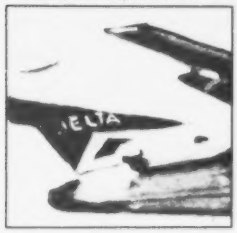

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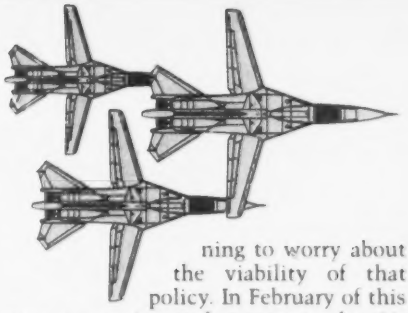
Is our national defense weak because we aren't spending enough money? Or because we are spending it in the wrong way?

The great push-button delusion

By Subrata N. Chakravarty

BEGINNING IN JULY THE U.S. airlifted 500 men and over 2,000 tons of equipment to Egypt. All this for a 90-day exercise for *12* F-4 jet fighters. That's right: 167 tons of equipment and 42 men per plane. Expensive? Staggeringly so. In today's high-technology military, the U.S. places its faith in small quantities of expensive, and highly complex, quality weapons with large support systems to counter the massive quantities of tanks, ships, planes and guns of the Soviet Union. Push-button warfare.

That's nothing new, of course. What's new is that the decision makers at the highest levels of the military are beginning to worry about the viability of that policy. In February of this year, in an internal memo to the Air Force and Navy that was leaked to the respected *Armed Forces Journal International*, Defense Secretary Harold Brown said: ". . . Because of our belief that we must compensate for a quantitative inferiority by ensuring qualitative superiority, that has been the direction we have emphasized in applying our technology. That choice has brought with it an increasing sophistication and complexity in equipment, as we understood it would. What we may not have understood as well were the consequences."



What are those consequences?

• The U.S. military, which moans about manpower shortages, is now the most bloated in the world. A U.S. division with its high-technology weapons now utilizes over 40,000 men with nondivisional support personnel—roughly 10,000 combatants—compared with 26,000 for a European army division and 17,000 for the Soviets.

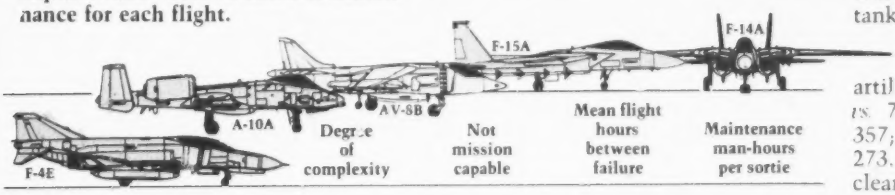
• Because the weapons are so expensive, the U.S. can't afford many of them and is now not merely outnumbered, but far outnumbered, by the Soviet Union. In 1979 the U.S. had 12,700 tanks, for example, *vs.* 50,000 for the Russians; 23,000 armored fighting vehicles *vs.* 55,000; 18,000 pieces of artillery *vs.* 40,700; 5,200 combat aircraft *vs.* 7,800. In 1980, 123 submarines *vs.* 357; 165 major surface combat ships *vs.* 273. Only in aircraft carriers is the U.S. clearly ahead: 13 to 2.

The lineup is, of course, not merely the U.S. versus the U.S.S.R. but the U.S. and NATO versus the U.S.S.R. and the Warsaw Pact nations. Add in those figures and the gap narrows, but only somewhat *(see table, p. 50)* and, overall, the gap is widening. The 1980 figures due to appear shortly are expected to show an imbalance worse than 1979's. The Soviets are outproducing us every year. In fiscal year 1981, for example, the U.S. Army will order 569 of its XM-1 Abrams tanks; the Soviets produce around 2,600 tanks a year. The U.S. will produce 378 combat aircraft in fiscal 1981 to the Soviets' 1,000-plus; 530 armored vehicles to 3,600; 96 helicopters to 500. Only in shipbuilding are the figures even close: nine major fighting surface ships for the U.S. to ten for the Soviets, and two U.S. attack submarines to five Soviet ones.

A paradoxical result of the U.S. attempt to emphasize quality—or rather

Keep 'em flying . . . when you can

Below, the Defense Department's own evidence of the huge cost of keeping complex military aircraft fit for duty. The data are from an internal memorandum published without the Pentagon's authorization (or verification). Note the high correlation between complexity and reliability. The Air Force's variable-wing F-111D was "not mission capable" two-thirds of the time and required more than 98 hours of maintenance for each flight.

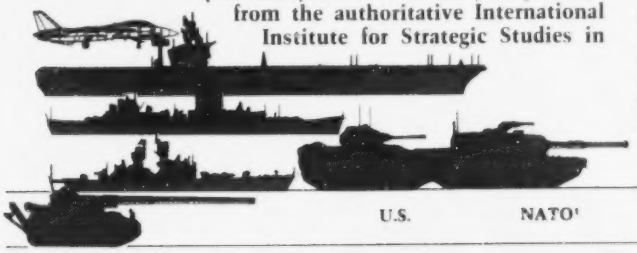


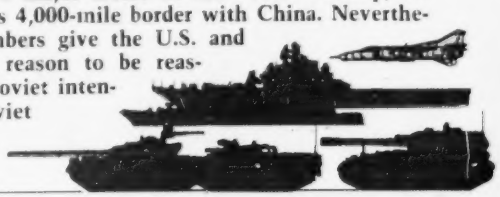
	Degree of complexity	Not mission capable	Mean flight hours between failure	Maintenance man-hours per sortie
Air Force				
A-10	low	32.6%	1.2	18.4
A-7D	medium	38.6	0.9	23.8
F-4E	medium	34.1	0.4	38.0
F-15	high	44.3	0.5	33.6
F-111F	high	36.9	0.3	74.7
F-111D	high	65.6	0.2	98.4
Navy/Marine Corps				
A-4M	low	27.7%	0.7	28.5
AV-8A	low	39.7	0.4	43.5
A-7E	medium	36.7	0.4	53.0
F-4J	medium	34.2	0.3	82.7
A-6E	high	39.3	0.3	71.3
F-14A	high	47.1	0.3	97.8

Source: Armed Forces Journal International, *May 1980*

The tilting balance of conventional terror

In the troops and weapons it can bring to bear in anything short of nuclear war, the Soviet bloc has been gaining strength in virtually every way compared with its allies. (An analysis due in early September from the authoritative International Institute for Strategic Studies in London was expected to report further Soviet gains.) Numbers alone, of course, cannot tell the whole story in matters so complex as military strategy and tactics. Undoubtedly a major factor in the Soviet buildup, for example, is its 4,000-mile border with China. Nevertheless, the numbers give the U.S. and its allies no reason to be reassured about Soviet intentions or Soviet capabilities.





		U.S.	NATO[1]	Total	Total	Warsaw Pact[2]	U.S.S.R.
Personnel	1979	2,022,000	2,859,221	4,881,221	4,763,000	1,105,000	3,658,000
	1975	2,130,000	2,941,250	5,071,250	4,496,000	921,000	3,575,000
Helicopters	1979	8,510	2,743	11,253	4,331	596	3,735
	1975	8,000	2,646	10,646	2,748	498	2,250
Combat aircraft	1979	5,225	3,292	8,517	9,930	2,120	7,820
	1975	7,646	3,319	10,965	9,936	2,126	7,810
Tanks	1979	12,675	15,971	28,646	64,370	14,370	50,000
	1975	10,530	13,023	23,553	55,265	15,265	40,000
Armored vehicles	1979	22,950	30,224	53,174	75,285	20,285	55,000
	1975	16,950	19,205[3]	36,155	39,600	4,600[3]	35,000
Artillery[4]	1979	18,000	15,357	33,357	49,225	8,525	40,700
	1975	16,600	6,201[3]	22,801	32,633	7,633[3]	25,000
Aircraft carriers	1979	13	4	17	2	0	2
	1975	15	5	20	0	0	0
Other major surface combat ships	1979	165	235	400	281	8	273
	1975	164	260	424	243	7	236
Submarines[5]	1979	80	135	215	256	8	248
	1975	75	138	213	118	8	110

[1] Belgium, Britain, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Turkey. [2] Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Rumania. [3] Figures may be significantly understated. [4] Excludes missiles and antiaircraft guns. [5] Excludes ballistic missile submarines.

Source: International Institute for Strategic Studies

complexity—over quantity is that the U.S. often falls behind in quality as well for long periods of time. The current U.S. main battle tank, for example, is the M60, which appeared in 1959. The new Chrysler-built XM-1 will have a revolutionary engine, revolutionary armor, a revolutionary fire-control system and, eventually, a larger gun. But since 1965, while the U.S. fiddled with its ideal tank, the Soviets have introduced four new generations of tanks, each one a significant improvement over the last. The XM-1, when it arrives in quantity in 1982 or later, may well be better than the Soviets' current T72—indeed, Dr. William J. Perry, undersecretary of defense for research and engineering, says it will be 20% to 30% better. But for 15 years American soldiers have been facing progressively improved Soviet tanks in an increasingly obsolescent tank of their own. "American weapons development—in my opinion wrongly—goes for order of magnitude improvement and all-round improvement," says Edward Luttwak of Georgetown University's Center for Strategic & International Studies, an adviser on defense policy to Ronald Reagan. Luttwak, a highly regarded military analyst, adds: "In the Soviet case you improve the characteristics one by one in sequential modification."

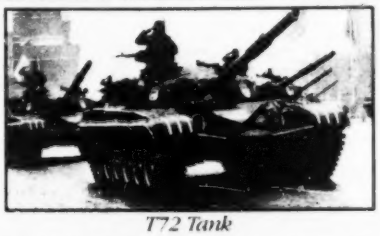
Secretary Brown's February memo went further. It said:

"It is time to reexamine our technological emphasis on performance to see whether the improvement we sought in combat effectiveness exists now as much in fact as it did in theory when we made the choice. If it does not, as is strongly implied, we must consider redirection of our technology away from sheer performance in favor of less complex and more practical weapons that we can buy in greater quantity, that we can support generously in the field, that we can maintain easily with service personnel, that we can train realistically with in peacetime and that will be more reliable and available and, on balance, more effective in war."

Here's an irony: The less-is-better, quality-over-quantity, push-button-warfare concept represents a sharp break with the U.S. weapons policies that played such a major role in winning World War II. When Franklin D. Roosevelt electrified the world by calling for production of 50,000 airplanes in 1944 he was, in effect, saying to the Axis: We will bury you in sheer numbers of equipment, we will crush you under the weight of our steel. It was the Germans who led in jet aircraft technology and in missile technology, but German technology went

Of tanks, turtles and frogs

T62 Tank



T72 Tank

The current U.S. main battle tank, the M60, first appeared in 1959. Its replacement, the new XM-1 now undergoing field testing, will be vastly improved—revolutionary, the Defense Department claims—in its engine, armor, fire-control system and, eventually, its gun. In the intervening 20 years, meanwhile, the Soviets have introduced four new tanks, each an improvement on some specifics of its predecessor. While the Soviets make turtlelike progress, the U.S. opts, at some risk, for a froglike leap.

M60 Tank

XM-1 Tank

down under the impact of workmanlike but workaday U.S. tanks, ships and aircraft. The Axis laughed at Roosevelt, regarding it as mere propaganda. In the end the U.S. made that goal look like peanuts, producing 104,000 airplanes in 1944 alone, 16,000 tanks a year and 104 ships in just 2 years.

These WWII machines weren't fancy. Henry Kaiser's famed Liberty Ships were unlovely tubs. But they were cheap and they did what they were supposed to do—they got the men and equipment to Europe in large numbers. In WWII the M4 Sherman tank was possibly the least impressive tank in Europe. But waves of them overwhelmed Hitler's outnumbered technological marvels, the Panthers and the Tigers. American equipment may not have been the best, but it carried the day because there was so much of it.

The U.S. has adopted exactly the opposite strategy since then. But the Soviet Union has not. "Quantity has a quality all its own," said V.I. Lenin. Soviet Admiral Gorshkov puts it another way: "Best is the enemy of good enough," meaning that insisting on the best equipment instead of good enough to do the job may jeopardize the ability to do the job at all. Says Professor John Erickson of Edinburgh University, an expert on the Red Army: "The Russian equipment is not so sophisticated, and it is soldier-proof." The late General Creighton Abrams, after whom the XM-1 is named, once was reported as saying after inspecting a captured Soviet tank: "It didn't have all the fancy things the colonels want in our tanks, but it could do every damn thing you want a tank to do."

The difference in the two approaches involves things familiar to any businessman. One is the difference between the learning curve and the drawing board—between production and R&D.

The Soviets tend to produce a weapon and then improve it, not only in tanks but in ships and planes as well. Only in the past decade did they launch the first two of their Kiev-class aircraft carriers—small carriers with vertical-and-short-take-off-and-landing planes, much smaller than the U.S.' huge nuclear Nimitz-class supercarriers. Now, however, a full-flight-deck nuclear-powered Soviet carrier is apparently on the way. Starting with submarines on average much smaller than those of the U.S., the Russians are due soon to deliver the first of their new Typhoon class; at 20,000 tons it is bigger than the U.S. Trident. They have introduced several new aircraft since 1970 and more are known to be coming.

The Soviets, don't avoid revolutionary improvements completely. The Soviet guided-missile ships were a revolutionary new response to aircraft carriers, and Russia's BMP mechanized infantry combat vehicle was designed from the ground up to replace the boxy armored personnel carriers of World War II.

But the Soviet Union clearly emphasizes evolution while the U.S. strives for revolution. It is rather like a race between a frog and a turtle. The turtle plods along while the frog sits still. Every once in a while the frog jumps, ahead of the turtle, it is to be hoped. But a just-released study by John M. Collins, senior specialist in defense at the Library of Congress, indicates that often the U.S.-Soviet military balance is otherwise. In many areas of practical technology, Collins says, the Soviets have moved ahead of the U.S. *(see table, p. 56).*

"It has come to this," says one staff assistant for defense with a senator on the Armed Services Committee. "You get someone saying we shouldn't buy more Improved Hawk air-defense missiles because we're going to have a Patriot air-defense system that will have all of these whiz-bang things. Okay, so you stop producing I-Hawks. Then the guy comes back and says it's taken us a little bit longer—20 years longer—to develop the Patriot than we thought it would. Then you find that the Patriot even after a 20-year development period does not have all the capabilities that were promised for it."

That's the disadvantage of staying on the drawing board instead of getting on the learning curve. It's not much different when an army does it than when a company does it—except that the stakes are so much higher.

Every high-technology company, too, knows how programs lag and reliability suffers when technology itself, instead of the market and the constraints of manufacturing, begins dictating the product line—when engineers begin doing things solely because nobody has ever done them before. Something like this may have been happening in the U.S. military ever since WWII. It was exacerbated by the McNamara era in the Pentagon, which saw the ascendancy of systems analysis in weapons-procurement decisions.

Like the McNamara computers that kept telling us we were winning in Vietnam, the McNamara systems analysis was increasingly theoretical. Add to that the constant pressure by Congress and the voters to reduce costs, and the temptation to stake all on state-of-the-art technology was overwhelming. "We all have a shared responsibility for the fact that the armed forces of this country are junkies for technology," says Frank Gaffney, staff assistant for defense affairs to Senator Henry Jackson.

It has led to such curious enterprises as the effort to get the F-4 up from Mach 1.7 (Mach 1 is the speed of sound) to Mach 2. In a recent article in the *Naval War College Review*, two Air Force officers, Major Charles Fox and Lieutenant Colonel D.A. Lorenzini, point out, "In representative combat situations, the F-4 will run out of fuel long before it gets to Mach 2."

Curious, too, is the Army's 9-year effort to develop a turbine engine for the XM-1 tank. Gas turbines have already been rejected by the Germans, the British and the Soviets because of their high susceptibility to dust (with which battlefields abound), their relatively poor fuel

efficiency and need for large air intake vents, which makes the tank more vulnerable. These are strict battlefield criteria. The Army picked the gas turbine because it gives greater acceleration and therefore greater agility. But that advantage is offset by the additional fuel weight it must carry to range as far as a diesel-driven tank.

Says Luttwak: "The U.S. Armed Forces have drifted away from the values of the military profession, which is combat capability, and has been seduced into the pursuit of engineering and managerial efficiency for its own sake." Lieutenant General Orwin C. Talbott, former commander of the First Infantry Division, says the fascination with technology comes from "all these Pentagon scientists trying to get the last ounce out of technology whether or not they're able to apply that last ounce effectively on the battlefield. The longer a man is in a command position in the battlefield, the less enamored he is of the technological edge and the more obsessed he becomes with trying to make what he has work."

As any company trying to meet government antipollution standards will tell you, the cost of 85% compliance is relatively low; the last 15% may cost double or triple. The same in the military. In a 1978 article in *Foreign Affairs*, Air Force Colonel Richard G. Head estimated that the cost per unit of new weapons had increased an average of 4½ times every decade in constant dollars since 1950, while improvements in existing designs only increased by a factor of two.

Result: fewer of everything. When an F-14 costs close to $23 million, the Navy gets only 467 instead of the 521 it says it absolutely needs and the 700-plus it originally wanted. There can be only 729 of those $20 million F-15s, only 7,000 of the $1.5 million XM-1s, only one or two of the $2.4 billion nuclear aircraft carriers. Each generation, the number of weapons that can be purchased decreases because the costs increase.

Some of the consequences are almost ridiculous. Like a family in straitened circumstances insisting on serving champagne and caviar while it can't buy milk for its children, the U.S. splurges on high technology but actually runs short of ammunition (FORBES, *Sept. 1*). Because so much is spent on $20 million-plus airplanes, $1 million missiles and $2 billion carriers, supplies are short all along the line. When the U.S. resupplied Israel after the 1973 Mideast War, for example, it had to take equipment intended for front-line U.S. Army units in Europe and National Guard units at home; the Soviet Union, on the other hand, resupplied its Arab clients from its spare inventories.

That, in turn, reduces training. For example, the U.S., according to the Brown memo, has never conducted operational training with an F-14 fighter firing Phoe-

The new balance in technology

Western brainpower no longer is (if, indeed, it ever was) a complete substitute for Soviet brawn. Below, an assessment of how the two military superpowers compare in applying high technology to particular weapons. The judgments are those of John M. Collins of the Library of Congress after a comprehensive two-year study and were made public by Congress only last month.

	U.S. superior			U.S.S.R. superior	
Applied Technology[1]	lead solid or enlarging	Soviets closing gap	Parity	U.S. closing gap	lead solid or enlarging
Airborne radar (AWACS)		X			
Aircraft					
Avionics		X			
Fixed-wing		X			
Helicopters		X			
VSTOL VTOL		X			
Wide-bodied transports	X				
Air defense missiles (surface-to-air: SAM)					
Land-based					X
Shipboard				X	
Air-to-air missiles		X			
Air-to-surface missiles		X			
Armored vehicles					
APC, AFV					X
Main battle tanks				X	
Artillery/rocket launchers					X
Command/control and communications					
Integrated naval				X	
Strategic	X				
Tactical		X			
Chemical/biological warfare					X
Cold-weather equipment					X
Cruise missiles					
Antiship				X	
Strategic	X				
Theater	X				
Electronic countermeasures					X
Electronic counter-countermeasures					X
Fire-and-forget weapons	X				
Ground-effect machines					
Air cushion (land, water)					X
Surface-effect ships	X				
Wing-in-ground					X
Intelligence sensors	X				
Land transport			X		
Look-down, shoot-down		X			
Munitions					
Artillery	X				
Precision-guided[2]	X				
Mine warfare					
Land	X				
Naval					X
Neutron weapons	X				
Night vision		X			
Radar sensors			X		
Small arms					X
Space systems					
Antisatellite					X
Surveillance/recon		X			

[1] These items are not necessarily deployed, and if deployed are not necessarily in strategically significant quantities. Failure to achieve superiority sometimes reflects deliberate design decisions. Status could be reversed rapidly in such cases. [2] One of nine rapidly evolving research programs with great potential for technological surprise, according to a consensus in U.S. military and intelligence communities.

Source: John M. Collins, U.S.-Soviet Military Balance Concepts and Capabilities 1960-1980.

nix missiles against multiple targets, its primary role for protecting the U.S. fleet from attack, because each Phoenix costs nearly $1 million. Although 1,400 to 1,500 aircraft carry the Maverick air-to-ground missile, the U.S. can afford to fire only 200 each year. In contrast, U.S. pilots flying the close-support A-10 aircraft are able to train with live ammunition because it is cheaper to use 30mm cannon shells. A decade ago, Air Force pilots flew 26 hours of training per month. In fiscal 1979 they flew far more complex planes only 16 hours.

The more complex the weapon, too, the more maintenance problems there are, as the Brown memo made clear *(see table, p. 49)*; and in today's volunteer army that maintenance is done by ever-less-capable military personnel. In fact, the task is often beyond them. "We're moving toward relying on factory manpower as opposed to blue-suit [uniformed] manpower to maintain sophisticated weapons systems," says Frank Gaffney. "I don't know how you fight a war when you have to send equipment back to the plant for spare parts."

The F-15 fighter. It has an "avionics intermediate shop" machine to test its highly complex systems. The diagnostic machine itself has over 40,000 parts, which fail frequently. Result: The Air Force has a problem just maintaining a parts inventory for the machine, which is down 50% of the time.

It is true, of course, that U.S. military equipment in the hands of the Israelis has beaten Soviet equipment manned by Arab armies. Does that vindicate quality over quantity? Not necessarily. The superior training, education and motivation of the Israeli citizen army undoubtedly plays the major role. It would be more than a little dangerous to assume that the Israelis win only because they have American equipment. Says Jeffrey Record of the Institute of Foreign Policy Analysis and another Reagan adviser: "We've reached the point now where we may have the most elegantly equipped Army but one that is simply too small to be able to survive anticipated rates of attrition." Adds Luttwak: "It's not necessarily that numbers allow you to overwhelm the enemy. It's that numbers give you flexibility and maneuverability. That's why there is terrible danger in what we're doing—terrible danger."

Edward Luttwak of Georgetown University
"The U.S. has been seduced into the pursuit of engineering efficiency."

Secretary of Defense Harold Brown
"We may not have understood the consequences."

Will the military's internal debate lead to any fundamental changes? The signs are mixed. Internally, Secretary Brown calls for a reexamination, but publicly, he has stated that our technology will "save" us. In congressional testimony in January Deputy Defense Secretary W. Graham Claytor Jr. said: "We intend to avoid the 'wonder weapon' syndrome that infatuated the Third Reich in the latter stages of World War II." Yet Pentagon-sourced stories proclaim the impending obsolescence of tanks and planes because of the arrival of "fire-and-forget" homing missiles. The fact is that precision guided munitions have not been nearly as effective in battle, where targets can react, as they promised to be in theory against sitting ducks. Missiles used in Vietnam had an accuracy of only 10% to 20%. The new generation of wonder weapons promises to be complex, hard to maintain and enormously expensive. The first fire-and-forget missile, the Sidewinder, cost $3,000 when it was used in Vietnam. The "improved" Sidewinder, according to one expert, will cost around $160,000.

Meanwhile, the XM-1 goes ahead at $1.5 million a copy, as do the $900 million Aegis cruiser and the F-15, along with a good deal of wishful thinking about—irony on irony—the increasing complexity of the *Soviet* military effort. "Ex-Defense Secretary James Schlesinger pointed out years ago that the Soviets are now in the grip of an R&D cartel that will make ours look like little Boy Scouts," says one former defense official. "They have now fallen prey to the complexity disease. The one encouraging thing about the whole trend is that we've sold complexity to the Russians and they'll do worse with it than we did."

Counting on one's opponent to make mistakes is a poor strategy, however. The superficially attractive idea that push-button technology can somehow eliminate the need for a citizen army and large-scale military production could well turn out to be the ultimate, fatal opiate of American democracy. ■

What's as good as owning a producing oil well? Owning standing redwood. Judging from Pacific Lumber, redwood might even be be ter

World's biggest dwarf

By Nick Galluccio

ROBERT B. HOOVER, 64, chairman and CEO of San Francisco's $258 million (sales) Pacific Lumber Co., has two high-class worries: how to spend the money his company makes, and how to justify what he has—or hasn't—done with all that cash.

The money pressure is no joke. In the last 18 months Hoover laid out $30 million cash for acquisitions, and he still had enough left over to pay out 60% of last year's earnings ($49 million) to company shareholders—nearly twice the payout of most forest products companies. PL's 31% return on its $160 million average equity is the industry's highest. Also, that's high-class return: Compared with its competitors, whose balance sheets are loaded with debt, PL is debt-free.

PL's wealth stems from what it owns: the largest U.S. stand of redwood timber, 165,000 acres concentrated in California's Humboldt and San Mateo counties, where rain and fog combine with proper soil conditions to produce this fire- and bug-resistant tree whose lumber retails for twice the price of most lumber. PL owns 24% of the industry supply; and with the price of redwood rising sharply, company profit has gone through the roof—up 127% since 1975. While PL's stock sold recently at 53, its timber value per share *(see table)* is well over $100, giving the company a total asset value, not counting diversifications, of $1.3 billion—roughly the same as Louisiana-Pacific, with 5 times PL's timberland.

PL also profits from its own prudent practices. For every tree it cuts, it grows one; analysts insist other companies don't replenish all the redwoods they harvest. Moreover, PL owns some 30% of the industry's higher-quality, old-growth trees—the big 100-to-300-year-old trees with more prime lumber.

Even luck and Uncle Sam seem to have conspired in favor of PL's position. Because of federal condemnation over the last dozen years of redwood timberlands for additions to California's Redwood National Park, plus the industry's aggressive harvesting, the standing inventory of redwood timber today is at only 16 billion board feet, half what it was in 1952. But as luck would have it, back in the last century PL founder Simon J. Murphy chose timber tracts that proved to be located far from the national park (though PL lost some land earlier to the state). By contrast, redwood companies like Arcata (FORBES, *Aug. 18*) and Louisiana-Pacific lost thousands of redwood acres to Uncle Sam.

With this bonanza on its hands, the first thing the company thought was to invest in more redwood timberlands. Alas, no acreage was available at prices that PL could even consider, so it began looking outside the lumber business. But many acquisitions there would have involved use of stock; and, says Hoover, "We are very jealous of our stock's value and aren't interested in diluting it." The one exception the company made was back in 1970 when it bought Victor Equipment, an acetylene-torch maker. (Five later acquisitions were for cash.)

Victor was never a bonanza like redwood, but the company's acetylene torches—used, for example, to cut steel beams and girders in the construction of skyscrapers and offshore oil drilling platforms—have already grabbed 40% of the U.S. market. Last year cutting and welding equipment accounted for half of company sales and a third of operating profits, and Hoover has been willing to spend some of his redwood profits to compete more effectively against such giants as Union Carbide, Air Products & Chemicals and British Oxygen's Airco division.

Billions in the woods

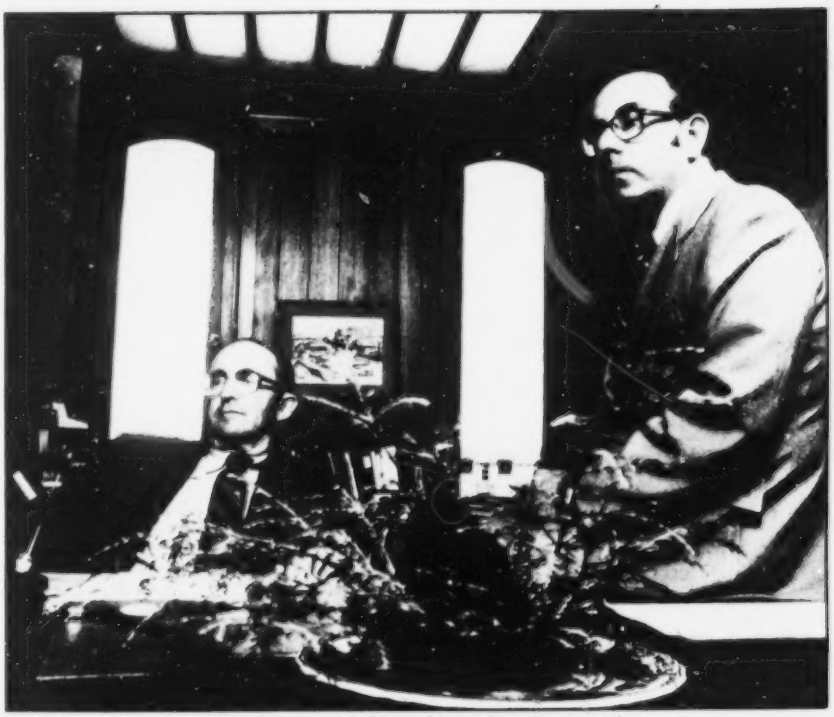
In the forest products industry, it's not just acreage but what's growing on it that determines how much a company is worth. Weyerhaeuser, for example, owns less than three-quarters the acreage of International Paper; yet Morgan Stanley estimates Weyerhaeuser's timber value at more than twice IP's. Why is Pacific Lumber in the billion-dollar class with so little acreage? It owns the world's largest redwood timber inventory.

Rank (by timber value)	Company	Acres owned (thousands)	Estimated timber value (millions)	Estimated timber value per share	Book value per share as stated	Book value per share timber adjusted	Stock price Aug 18	Timber value/ stock price
1	Weyerhaeuser	5,923	$9,534	$ 73	$21.05	$ 89.77	36⅞	1.98
2	International Paper	8,410	3,857	80	53.76	117.17	42⅝	1.88
3	Georgia-Pacific	4,500	3,404	31	17.99	42.98	28⅜	1.09
4	Crown Zellerbach	2,053	2,910	115	40.59	147.99	51	2.25
5	Champion International	3,066	2,120	38	27.46	58.83	27⅜	1.39
6	Boise Cascade	2,664	1,703	64	42.28	100.41	37	1.73
7	ITT (Rayonier)	1,274	1,575	11	39.14	48.91	31⅛	0.35
8	St. Regis Paper	3,179	1,571	48	37.44	79.58	31¾	1.51
9	Louisiana-Pacific	880	1,319	44	21.53	59.10	27⅞	1.58
10	Burlington Northern	1,492	1,294	40	65.19	105.88	42⅛	0.95
11	Pacific Lumber	165	1,268	106	14.33	119.50	54	1.96
12	Scott Paper	2,914	1,222	31	26.20	55.37	18¾	1.65
13	Potlatch	1,311	1,210	80	31.84	107.43	39¾	2.01
14	MacMillan Bloedel	1,305	1,091	51	33.52	88.59	29½	1.73

Besides absorbing some of PL's huge cash flow, the cutting and welding business helps smooth out the inevitable tendency of even redwood to rise and fall with housing.

The sorry state of home-building these days is the reason PL's earnings are off a bit this year, to $1.78 in the first six months, *vs.* $2.01 a year earlier. But far from cutting prices, Hoover has PL out cutting more redwood than it can sell. Demand is sure to return, he reasons, and there's nowhere for redwood prices to go but up. In fact, analyst Paul H. Baastad of Rowe & Pitman, Inc., who follows PL closely, believes redwood prices will climb on average by 20% a year.

In this setting, Hoover and other PL insiders worry less about temporary earnings dips than about a possible raid by some acquisition-hungry outsider. Fortunately for them, the well-heeled heirs of founder Simon Murphy's friends and relatives plus other insiders still own some 40% of the stock and are kept happy with that big dividend. But just to be on the safe side, three years ago PL's stockholders adopted an antitakeover charter amendment requiring 80% stockholder approval before any of the company's assets can be sold. Says Hoover: "We aren't taking any chances." ■



Pacific Lumber's CEO Robert Hoover (left) *and President Gene G. Elam*
Welding is booming and beautiful, but it ain't redwood.

Is the tide turning against investing in "tangibles" in favor of securities? Don't bet on it, says Bob Salomon, who wishes it weren't so.

Stocks? Or collectibles?

The Money Men

By Thomas C. O'Donnell

IF YOU COUNTED ON the rising value of your home—or perhaps your collection of rare books or Chinese ceramics—to beat inflation during the past year, you came out a loser. Robert S. Salomon Jr., a general partner in Salomon Brothers, recently made his annual report on comparative investments. According to the report, the Consumer Price Index (through June 1, 1980) jumped by 14.5%, while rare books gained 14%, Chinese ceramics 13.1% and housing 10.4%.

Salomon is head of equity policy at the huge block-trading firm—and bearer of one of Wall Street's proudest names. In short, Bob Salomon is a stock market man. So, he's not displeased that some so-called tangibles failed to keep up last year. "There is an ongoing confrontation between tangible and financial assets," asserts the straight-talking 43-year-old money man. "Tangibles have been winning because they have achieved returns higher than the CPI while financial assets have lost ground to inflation."

Stocks, Salomon's stock in trade, did do a bit better last year. They rose 12.5%. But that still wasn't enough to keep up with the CPI and it was paled by gold which soared 104% during the year, oil, a 92.4% gainer, and even silver which, despite a plunge from its near $50-per-ounce level in January, posted a 76.8% rise. Bonds, however, actually declined by 3.1%.

Although Salomon puts out a report on the stock market every month, his annual review of comparative investments (this is the fourth) has become almost as eagerly awaited by portfolio managers and sophisticated investors as the market comments of the firm's highly influential economist, Henry Kaufman. Especially so this year. "This report has given investors intellectual justification for buying stocks," says one. No question: The belief that stocks are bargain-priced has been a major factor in the recent rally that has seen the Dow Jones industrial average soar by more than 200 points since April.

However, Bob Salomon isn't doing any celebrating. He's not convinced that equities have really turned the corner. Says he: "Significant amounts of money are being diverted into areas that are unproductive." Sitting in his sparsely furnished corner office that looks down on New York's financial district 41 floors below, Salomon adds: "Incentives must be provided for increased investment in financial assets."

Isn't that incentive being provided by the current bull market? Only for the near term, he says. "Stocks are benefiting from an easing of inflation and a cyclical decline in interest rates. But for the long run, nothing has been done to relieve the root causes of inflation. So a sustainable rally has not begun."

This view, of course, places Salomon in a distinct minority on Wall Street. "I realize that institutional investors disagree with me more now than they have anytime in the past. But I'm more comfortable when the majority has a different view than when it agrees with me," he says with typical frankness.

Salomon comes by his confidence concerning investment markets quite naturally. His grandfather was one of the founders of Salomon Brothers and his father was a floor broker on the Big Board. In 1975 his uncle William (Billy) Salomon, then the firm's managing partner, wooed Salomon away from U.S. Trust, where he had been managing money ever since his graduation from Amherst in 1959. Although he looks like a dealmaker, he prefers the intermediate position between wheeling and dealing and pure research.

The idea for tracking the relative performance of tangible and intangible investments came by accident. Following an optimistic speech he gave on the equity market in San Francisco in 1977, an elderly investor asked Salomon to explain why all his holdings except stocks had shown a gain in recent years. "He tore me apart with his questions. And I wanted to see if his experience had any relevance for other investors."

That's an interesting thing about Bob Salomon. He isn't awed by the academic sages and big professionals. He thinks as much can be learned by watching what the so-called little fellow does. He doesn't subscribe to the idea the odd-lotter is always wrong.

"Individuals are not burdened by institutional constraints," is the way he puts it. "Their unexpected success in real estate has prompted them to look at other hard assets."

Salomon contends that last year's

A dreary decade for stocks and bonds

Gold and oil were the best investments during the 1970s. Both posted a compounded annual rate of return of 31.6%. Stocks with a 6.8% gain and bonds with a 6.4% increase failed even to match the CPI, which rose by 7.7%.

	10 years	Rank	5 years	Rank	1 year	Rank
Gold	31.6%	1	28.4%	3	104.0%	1
Oil	31.6	2	17.7	7	92.4	2
Silver	23.7	3	27.3	4	76.8	3
US stamps	21.8	4	31.0	2	43.2	4
Chinese ceramics	18.8	5	38.7	1	13.1	11
Rare books	16.1	6	12.7	10	14.0	10
US coins	16.0	7	21.9	5	25.3	5
Diamonds	15.1	8	18.3	6	25.0	6
Old masters	13.4	9	15.2	8	17.4	7
US farmland	12.6	10	13.4	9	14.3	9
Housing	10.2	11	11.6	11	10.4	13
Consumer Price Index	7.7	12	8.9	12	14.5	8
Foreign currency*	7.5	13	8.4	13	4.5	14
Stocks	6.8	14	6.4	14	12.5	12
Bonds	6.4	15	5.8	15	–3.1	15

*West German mark, Japanese yen, Swiss franc and Dutch guilder. *Source: Salomon Brothers*

slowing of housing prices was only temporary and he believes the worst for the housing market is over.

But cash-heavy institutions are unable to invest in housing and other tangibles to the degree that individuals can. So where will they put their money during this decade? Without skipping a beat, Salomon predicts: "They'll gravitate toward alternative investments that *look* like securities, such as futures, options, mortgage pools, foreign securities, venture capital and indexed bonds. And additional security-like alternatives could also be created."

So, that's the bad news for right now: Bob Salomon isn't particularly bullish on the stock market. He is particularly bearish about oil stocks. "The fundamentals of the oil business are deteriorating," he says. "I began writing about the oil glut early this year, but nobody's listening.

Salomon of Salomon Brothers
"A sustainable rally has not begun."

When I talk to portfolio managers about it, they ask, 'How can you fight the tape?' "

Talking to portfolio managers and other investors around the world takes up the bulk of Salomon's time. He finds himself traveling about one week in four. When not on the road, Salomon commutes by train from his home in Connecticut all the way to his office in lower Manhattan, arriving a litle before 8 a.m., departing usually by 5 p.m.

Fittingly enough, his hobbies include collecting coins, which rose 25.3% last year, and stamps, which did even better, jumping 43.2%. Yet don't such fantastic price rises mean that the tangible-investment bubble is about to burst? Salomon doesn't think so. "The market in collectibles now encompasses a spectrum of obscure items from beer cans to worthless—in an operating sense—securities. The breadth of interest suggests there is a limit to the downside risk in such investments."

That is, of course, until inflation cools and a major bull market begins—something Salomon doesn't expect to happen anytime soon. "Too many people have learned how to play and win the inflation game," he says, shaking his head. "They have a vested stake in high and rising inflation.

Don't throw away those campaign buttons. ■